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Computerized characterization of contrast enhancement patterns for classifying pulmonary nodules

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Abstract:

This paper presents a computerized classification scheme of pulmonary **nodule** contrast enhanced **dynamic** CT images. Conventionally, we extracted 3-D **nodule** images by using a deformable surface model. However, there was a limit in **segmentation** the 3-D **nodule** images contacted with vessels and bronchi. In order to improve **segmentation** accuracy of the 3-D **nodule** images, we developed a software to eliminate the leaked region of the 3-D **nodule** image due to vessels and bronchi interactively. Using our data set including 68 cases (28 benign and 40 malignant), we demonstrate how the **segmentation** accuracy affects the classification accuracy of our scheme.

Index Terms:

cancer computerised tomography feature extraction image classification image en
image **segmentation** lung software tools 3D **nodule** image extraction benign lesi
bronchi cancer classification accuracy computerized classification contrast enhanc
CT images contrast enhancement patterns image **segmentation** accuracy maligna
pulmonary **nodules** classification **segmentation** accuracy software tool vessels

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21	BRS	L24	0	23 and dataset\$2	USPA T	2004/11/08 11:53	
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24	BRS	L26	1	25 and volum\$4	USPA T	2004/11/08 11:54	

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28	BRS	L31	1	30 and maximiz\$4	USPA T	2004/11/08 12:06	
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30	BRS	L33	0	31 and maximizing	USPA T	2004/11/08 12:07	
31	BRS	L34	1	31 and dynamic\$5	USPA T	2004/11/08 12:08	
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33	BRS	L36	1	34 and expect\$5	USPA T	2004/11/08 12:08	
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36	BRS	L39	1	38 and (((boundar\$4 or border or edg\$4) near4 (nodul\$4)))	USPA T	2004/11/08 12:09	
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74	BRS	L78	0	77 and dynamic\$4 near4 programm\$4	USPA T	2004/11/0 8 13:41	
75	BRS	L79	1	77 and dynamic\$4	USPA T	2004/11/0 8 13:33	
76	BRS	L77	2	76 and parameters	USPA T	2004/11/0 8 13:47	
77	BRS	L80	0	73 and dynamic\$4 near4 programm\$4	USPA T	2004/11/0 8 13:34	
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79	BRS	L82	1	81 and (((estimat\$)\$ near4 (boundar\$4 or border or edg\$4)))	USPA T	2004/11/0 8 13:35	
80	BRS	L83	188	74 and ((continuous\$5) near4 (border or edg\$4 or bounadr\$4))	USPA T	2004/11/0 8 13:43	
81	BRS	L84	0	83 and dynamic\$4 near4 programm\$4	USPA T	2004/11/0 8 13:41	
82	BRS	L85	26	83 and dynamic\$4	USPA T	2004/11/0 8 13:46	
83	BRS	L86	8	85 and parameters	USPA T	2004/11/0 8 13:42	
84	BRS	L87	60	nodul\$4 and ((continuous\$5) near4 (border or edg\$4 or bounadr\$4))	USPA T	2004/11/0 8 13:43	
85	BRS	L88	0	nodul\$4 and ((estimat\$) near4 (continuous\$5) near4 (border or edg\$4 or bounadr\$4))	USPA T	2004/11/0 8 13:44	
86	BRS	L89	3	((estimat\$) near4 (continuous\$5) near4 (border or edg\$4 or bounadr\$4))	USPA T	2004/11/0 8 13:45	
87	BRS	L90	2	89 and dynamic\$4	USPA T	2004/11/0 8 13:44	
88	BRS	L91	1	((((estimat\$) near4 (border or edg\$4 or bounadr\$4) near4 (nodul\$4)))	USPA T	2004/11/0 8 13:46	

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92	BRS	L95	306	((estimat\$) near4 (border or edg\$4 or bounadr\$4))) and dynamic	USPA T	2004/11/0 8 13:47	
93	BRS	L96	226	95 and parameters	USPA T	2004/11/0 8 13:48	
94	BRS	L97	23	((estimat\$) near4 (border or edg\$4 or bounadr\$4))) and (dynamic near4 program\$4)	USPA T	2004/11/0 8 13:48	
95	BRS	L98	17	97 and parameters	USPA T	2004/11/0 8 14:33	
96	BRS	L99	0	98 and maximix\$4	USPA T	2004/11/0 8 14:33	
97	BRS	L100	16	98 and maximum\$4	USPA T	2004/11/0 8 14:33	